a manual input device having a substantially unlimited range of mechanical motion to control a separation between the sample and said probe~~, said manual input device having a substantially unlimited range of mechanical motion~~;

a detector that generates a probe motion signal related to movement of said probe;

an alerting device responsive to said signal to provide substantially real-time feedback to an operator, the feedback being indicative of interaction between the sample and said probe.

2. (original) The probe microscope of Claim 1, wherein said alerting device is a mechanical resistance device coupled to said manual input device

3. (original) The probe microscope of Claim 2, wherein said manual input device is a rotatable knob.

4. (original) The probe microscope of Claim 3, wherein said resistance device is a passive resistance device that changes an amount of torque necessary to turn the knob.

5. (original) The probe microscope of Claim 4, wherein said passive resistance device is a brake.

6. (original) The probe microscope of Claim 4, wherein the amount of torque is related to a magnitude of the interaction

7. (original) The probe microscope of claim 2, wherein said resistance device is an active resistance device.

8. (original) The probe microscope of Claim 7, wherein said active resistance device actively moves said manual input device.

9. (original) The probe microscope of Claim 2, wherein the feedback produced by said resistance device is variable.

10. (original) The probe microscope of Claim 9, wherein the probe motion signal is indicative of a tip-sample interaction, and wherein the variable resistance is related to the interaction.

11. (original) The probe microscope of Claim 1, wherein the feedback produces an audible output, wherein the audible output is related to a magnitude of the interaction.

12. (original) The probe microscope of Claim 11, wherein the audible output is one of pitch and volume.

13. (original) The probe microscope of Claim 1, further comprising

a displacement sensor that measures the relative motion between said probe and the sample and generates a corresponding position signal; and

a closed-loop feedback controller that generates a drive signal in response to the position signal

14. (original) The probe microscope of Claim 3, wherein said knob has a range of motion greater than 180°.

15. (original) The probe microscope of Claim 1, wherein the feedback is one of substantially proportional, exponential and logarithmic with respect to the interaction.

16. (withdrawn)

17. (withdrawn)

18. (withdrawn)

19. (withdrawn)

20. (withdrawn)

21. (withdrawn)

22. (withdrawn)

23. (withdrawn)

24. (withdrawn)

25. (original) A probe microscope comprising:

a probe;

a scanner for generating relative motion between said probe and a sample;

a linear manual input device to control a separation between the sample and said probe;

a detector that generates a probe motion signal related to movement of said probe;

an alerting device responsive to said signal to provide substantially real-time feedback to an operator, the feedback being indicative of interaction between the sample and said probe.

Please add claims 26 to 50, as follows:

26. (new) The probe microscope of Claim 1, wherein said scanner provides the relative motion in at least two orthogonal directions.

27. (new) A probe microscope comprising:

a probe;

a Z actuator for generating relative motion between said probe and a sample;

a manual input device to control a separation between the sample and said probe via the Z actuator, said manual input device having a range of motion equal to or greater than 180 degrees;

a detector that generates a motion signal related to the relative motion; and

an alerting device responsive to said signal to provide substantially real-time feedback to an operator, the feedback being indicative of interaction between the sample and said probe.

28. (new) The probe microscope of Claim 27, wherein said alerting device is a mechanical resistance device coupled to said manual input device.

29. (new) The probe microscope of Claim 28, wherein said manual input device is a rotatable knob.

30. (new) The probe microscope of Claim 29, wherein said resistance device is a passive resistance device that changes an amount of torque necessary to turn the knob.

31. (new) The probe microscope of Claim 30, wherein said passive resistance device is a brake.

32. (new) The probe microscope of Claim 31, wherein the amount of torque is related to a magnitude of the interaction.

33. (new) The probe microscope of claim 28, wherein said resistance device is an active resistance device.

34. (new) The probe microscope of Claim 33, wherein said active resistance device actively moves said manual input device.

35. (new) The probe microscope of Claim 28, wherein the feedback produced by said resistance device is variable.

36. (new) The probe microscope of Claim 35, wherein the motion signal is indicative of a tip-sample interaction, and wherein the variable resistance is related to the interaction.

37. (new) The probe microscope of Claim 27, wherein the feedback produces an audible output, wherein the audible output is related to a magnitude of the interaction.

38. (new) The probe microscope of Claim 37, wherein the audible output is one of pitch and volume.

39. (new) The probe microscope of Claim 27, further comprising

a displacement sensor that measures the relative motion between said probe and the sample and generates a corresponding position signal; and

a closed-loop feedback controller that generates a drive signal in response to the position signal.

40. (new) The probe microscope of Claim 27, wherein the feedback is one of substantially proportional, exponential and logarithmic with respect to the interaction.

41. (new) The probe microscope of Claim 27, wherein the Z actuator is a component of a three-dimensional scanner.

42. (new) The probe microscope of claim 27, wherein said manual input device has a substantially unlimited range of motion.

43. (new) A method of making a force curve measurement on a sample, the method comprising:

providing a Z actuator;

manually controlling the relative motion between a probe and the sample via the Z actuator;

detecting a force on the probe in response to said controlling step;

providing an alert based on the force; and

wherein said controlling step includes using a manual input device having a substantially unlimited range of mechanical motion.

44 (new) The method of Claim 43, wherein said controlling step includes using a rotatable knob.

45. (new) The method of Claim 44, wherein said providing step includes using a brake to control a torque required to rotate the knob.

46. (new) The method of Claim 45, wherein the torque is proportional to the force.

47. (new) The method of Claim 43, further comprising the step of repeating said controlling step in response to at least of one said measuring and detecting steps.

48. (new) The method of Claim 43, wherein the alert is an audio alert.

49. (new) The method of Claim 43, further comprising the step of measuring a separation between the probe and the sample.